SUPREME COURT, U. S.

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Supreme Court of the United States

OCTOBER TERM 1967

No. 395

MOTOROLA, INC.

Petitioner,

vs.

ESTHER MARION ARMSTRONG, Executrix,

Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SEVENTH CIRCUIT

BRIEF FOR RESPONDENT IN OPPOSITION

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BRIEF FOR RESPONDENT IN OPPOSITION

There are no special or important reasons why the writ prayed for in this case should be granted.

This is a patent infringement suit under three patents that have long since expired. The last of the patent licenses referred to in the petition terminated ten years ago with the expiration of the last of the three patents in suit. There is no other pending litigation involving such patents or licenses. There is no conflict among the decisions of the federal courts on any factual issue or question of law that has been decided in this case. There is presented here no important question of federal law which has not been, but should be, settled by this Court.

OPINIONS BELOW

In addition to the opinions referred to in the petition, there is the opinion in the companion case, *Armstrong* v. *Emerson Radio and Phonograph Corp.* (SD NY 1959), 179 F. Supp. 95, involving the same patents and the same issues of infringement and enforceability and reaching the same conclusions.

QUESTIONS PRESENTED

The three questions presented in the petition for certiorari are not expressed in the terms and circumstances of the case and do not fairly state questions that are raised in the record or by the decision of the Court of Appeals.

Question 1 ignores material facts and, as stated, suggests an issue that is not presented by the record. In the terms and circumstances of the case, the question is: Whether a patent owner, who granted non-exclusive, royalty-bearing licenses for the complete use of his patented inventions and to the full extent of the commercial requirements of his licensees, was justified in including in such licenses an immunity under system patents in respect of the sale of equipment manufactured by his licensees when the courts have subsequently held that the sale of such equipment, in the absence of such immunity, would constitute contributory infringement of the licensor's system patents.

Question 2 purports to state a question under the statutory provisions relating to the reissue of defective patents. As stated, the question is not governed by such statutory provisions. The statutory provisions relating to reissue of defective patents are not concerned with the distinctions between direct infringement and contributory infringement or with whether a sub-combination of a patented combina-

tion may be separately claimed. In accordance with established law on patent reissue, the question presented on the record is: Whether the reissue patent in suit was validly reissued for the invention that was intended to be protected and secured by the original patent and whether the holding by the Court of Appeals, in the affirmative, was in conformity with the principles enunciated by this Court in *U. S. Industrial Chemicals, Inc.* v. *Carbide and Carbon Corp.* (1942), 315 U. S. 668.

Question 3 states a question of construction of 35 U. S. C. § 271(a), but, in doing so, misinterprets the decision by the Court of Appeals. The question decided by the Court of Appeals is: Whether, within the purview of 35 U. S. C. § 271(a) and the predecessor authorities, a system patent can be infringed by the use of the patented system only if all of the constituent parts, when assembled for use, are owned and operated by the same person or corporate entity.

STATUTES INVOLVED

This case involves, in addition to the statutory provisions set forth in the petition, Section 271(d) of the Patent Act of 1952 [35 U. S. C. § 271(d)], which provides:

> "(d) No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having done one or more of the following: (1) derived revenue from acts which if performed by another without his consent would constitute contributory infringement of the patent; (2) licensed or authorized another to perform acts which if performed without his consent would constitute

contributory infringement of the patent; (3) sought to enforce his patent rights against infringement or contributory infringement."

STATEMENT OF THE CASE

This case concerns the discoveries of Edwin H. Armstrong that have resulted in the system of radio popularly known as FM.

The Court of Appeals and District Court have held (1) that the three Armstrong FM patents litigated at the trial were valid and infringed by petitioner (herein referred to as Motorola); and (2) that Armstrong did not misuse his FM patents by granting licenses and collecting royalties for the use of his FM inventions.

The three patents that have been sustained below are patent No. 1,941,069 issued December 26, 1933, covering the wide band FM system (hereinafter referred to as patent '069); patent No. 1,941,066 issued December 26, 1933, covering the synchronous heterodyne method for frequency modulation reception (hereinafter referred to as patent '066), and Reissue No. 21,660 issued December 17, 1940, on a reissue application filed October 21, 1940, (original application filed February 19, 1940, and issued September 17, 1940), covering a preemphasis and deemphasis system for use in FM broadcast services (hereinafter referred to as reissue '660).

In its petition, Motorola has not described Armstrong's FM inventions, nor referred to their significance and impact in the radio industry. Furthermore, Motorola has not referred to Armstrong's completely open licensing policy and has not properly described Armstrong's practice of granting licenses on open and uniform terms in all fields of radio where his inventions were employed. Those facts, as found

by the courts below on uncontradicted evidence, are essential to an understanding and proper assessment of the questions presented in the petition. We summarize such facts here:

The Invention of Armstrong Patent No. 1,941,069

The Court of Appeals and the District Court have found that Armstrong patent '069 disclosed and claimed the wide band FM system by which noise is suppressed in radio signaling (Petition, 7a-8a, 11a-12a; DA 45-49)*.

The teaching of Armstrong concerning the wide band FM system was contrary to earlier practice and theory both as to the results obtained in the suppression of noise and the method whereby such results were obtained (F 11-12, DA 44; DA 2685-2686). The emergence of the wide band FM system was a development which profoundly influenced the radio art (F 13, DA 44; DA 2685-2686, 2328).

When Armstrong patent '069 issued on December 26, 1933, FM broadcasting was not in existence and there was no use of frequency modulation for any commercial purpose. Frequency modulation as a theoretical possibility for impressing a signal on a radio wave by varying its frequency had been known from the earliest days of radio, but the academic consensus was adverse to frequency modulation; the radio art had passed it by and there was no practical use of it (F 35-37, 43, DA 47-48).

In patent '069, Armstrong disclosed how noise could be suppressed in radio signaling and in his new art he animated the discarded method of frequency modulation and made

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*References herein to the Appendix to Brief for Defendant-Appellant in the Court of Appeals are indicated by "DA" and to the Appendix to Brief for Plaintiff-Appellee, one volume, by "PA". The findings of the District Court are indicated by "F". The findings are printed at DA 42-83 and reported at 230 F. Supp. 337, 339-379.

use of it in a particular way (F 23-33, DA 45-47). The system was unique in that both the transmitter and receiver were built for operation in a bandwidth* that was several times greater than the bandwidth that had theretofore been conventional in radio signaling (F 18, DA 45; Petition, 7a-8a, 11a-12a). It involved producing a particular wave at the transmitter, called a wide swing wave, and receiving that particular wave with a wide band receiver; the receiver had wide selective circuits to discriminate between the wide frequency swings of the signaling wave and the lesser frequency variations due to interfering signals and disturbances in the receiver (F 24, DA 45). Thus, the transmitter and receiver were complementary instruments for the practice of a novel method of noise reduction. Each of them, and both together, functioned in a manner that was contrary to the teachings of the prior art. The two claims of patent '069 pointed to the system as a whole and the novel method which it employed. The patent disclosed a working example of the invention and disclosed the principle and the essential characteristics of the whole system and of its constituent parts (Petition 7a-8a; Pl. Ex. 13, DA 114, 3420-3421).

In May, 1940, the Federal Communications Commission, in referring to the wideband FM system of patent '069 that had been disclosed to it by Armstrong, and in deciding that such FM system would be employed in a new radio service for the public, stated

> ". . . The Commission believes that this is one of the most significant advances that has been made in aural broadcasting in recent years." (F 212, DA 65).

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*The bandwidth of a radio circuit refers to the range or band of frequencies to which the circuit is substantially responsive or which can be passed by the circuit. Normally, a circuit is said to be tuned to the frequency midway in the bandwidth.

The Court of Appeals, affirming the District Court, held that Motorola had infringed patent '069 and described how Motorola had applied the wide band FM system in its receivers for FM broadcasting and television sound broadcasting and in its transmitters and receivers for FM communication equipment (Petition, 11a-14a).

The Invention of Armstrong Reissue Patent No. 21,660

In the late '30s, Armstrong discovered that he could further suppress the effects of noise in the wide band FM receiver and improve the faithfulness of reproduction of sound signals for the broadcast services by selectively suppressing the high pitched noise or "hiss" in the audio circuits of the receiver and by predistorting the sound at his wide band transmitter to compensate for the selective effect of the receiver audio circuits on the signaling frequencies. Armstrong discovered that he must design his receiver to have what is called a wide admittance band or a discriminator circuit substantially wider than the wide range of swing of the signaling wave (F 135-144, DA 56-57). He devised a particular kind of distortion of the frequency modulated wave that later was adopted by the Federal Communications Commission for standard use in the FM broadcast services (F 149, DA 57-58).

Armstrong's preemphasis and deemphasis invention is disclosed in Reissue '660 (F 135-144, DA 56-57) and it is universally employed for transmission and reception in FM broadcasting and television sound broadcasting (F 149, DA 57).

The Invention of Armstrong Patent No. 1,941,066

Several years before the discovery of the wide band FM system, Armstrong had discovered a basic method for receiving frequency modulated waves which was referred to

by the Court of Appeals as a pioneer invention (Petition, 9a). That invention, referred to by the courts below as a synchronous heterodyne, was disclosed in patent '066 (F 96-98, DA 52).

As stated by the Court of Appeals, the inventive concept involved heterodyning or combining the received FM wave with itself to reproduce the signal (Petition 8a). In the receiver, there were circuits which would pass the received radio wave along two separate paths, the wave in each path containing all of the variations in frequency occurring in the received signal (F 97-98, 111, DA 52, 54). The radio wave in one of such paths was modified in accordance with the frequency variations in the signal and was thereafter combined at the detector with the radio wave from the other path that was synchronously varying in frequency, to reproduce the signal (DA 2699-2701).

The synchronous heterodyne receiving method has been in universal use in FM broadcast receivers and television receivers, and, as the courts below have found, Motorola has employed it in all of its receivers, including its FM communication receivers (Petition, 8a-9a; F. 290-293, DA 76).*

Armstrong's FM Licenses

Edwin H. Armstrong was an Electrical Engineer whose life was devoted to research and invention in the field of radio communication. A member of the faculty of Columbia

*In its petition, Motorola states that it does not seek certiorari with respect to the decisions below on patent '066 (Petition, p. 4). However, in assessing Motorola's certiorari contentions against Armstrong's licenses under patent '069 and reissue '660, it should not be overlooked that patent '066 was a receiver patent and provided an independent basis for Armstrong's collection of royalties in respect of the manufacture and sale of FM receivers. Likewise, Armstrong patent No. 1,941,068 (not prosecuted in the litigation) was a transmitter patent, covering circuits for producing a frequency modulated wave that have been embodied in FM broadcast transmitters, and provided an independent basis for licensing such transmitter for a royalty.

University as Professor of Electrical Engineering, he received world-wide recognition for having made a number of fundamental contributions of an inventive character in the radio field, including FM.

Armstrong was never engaged in any manufacturing business and was never employed by any business corporation. Armstrong never attempted by means of his FM inventions to obtain control over any field of manufacture, sale or use of FM equipment covered by his patents or of any other radio equipment or devices. Armstrong derived revenues from his FM inventions solely by granting licenses under his FM patents.

Armstrong's first FM license was granted to General Electric Company in 1939 (Pl. Ex. 15, DA 116, 3511 and 3517). In the ensuing years, Armstrong established a uniform licensing system under his FM patents open to all manufacturers and commercial users of FM apparatus on non-discriminatory terms. Armstrong had four principal types of licensees under his FM patents: (1) Manufacturers of FM broadcast receivers and television receivers; (2) Broadcasters who operated an FM broadcast transmitter; (3) Manufacturers of two-way communication apparatus and other commercial communication apparatus; and (4) Companies engaged in public service communication for toll (F 225-232, DA 67-68).

In Armstrong's licenses, a royalty was payable by the licensee in respect of FM apparatus that embodied his patented FM inventions or had been designed and manufactured by the use of his FM inventions (Pl. Ex. 15, DA 116, 3622 and Pl. Ex. 16, DA 116, 3724). The terms of his licenses had been negotiated between Armstrong and his licensees in the various fields of use. There is no evidence that any licensee or negotiator for a license ever requested a license limited to particular FM patents owned by Arm-

strong or ever requested anything less than immunity under all of Armstrong's FM patents.*

The existence of four separate forms of license was due to the different kinds of business in which radio manufacturers and commercial users happened to be engaged and the resultant different methods of computing royalty that were appropriate in such different kinds of business. If a manufacturer happened to be engaged in more than one of such kinds of business, it could obtain a separate license from Armstrong for each of such kinds of business in which it was engaged, and several of the licensees actually held more than one form of Armstrong license (F 228-232, DA 67-68). Moreover, in 1940, Armstrong offered licenses to Motorola both for FM home receivers and for FM mobile communication equipment (F 317, DA 79).

Armstrong granted no exclusive license to anyone for any purpose. Armstrong never refused a license for the use of any of his FM inventions to anyone for any purpose. This case does not present the situation where patent licenses were employed for regulating who might be engaged in any line of trade, or where licensees were protected from competition by the grant of exclusive licenses, of a limited number of licenses or by division of fields of use among such licensees. Compare *General Talking Pictures Corporation* v. *Western Electric Company, Inc.* (1938), 304 U. S. 175, 183-190.

REASONS FOR DENYING THE WRIT

Armstrong's FM patents have been sustained and held to be infringed by Motorola. The judgment provides that there shall be an accounting for damages by reason of

*In addition to the commercial royalty-bearing licenses, Armstrong also licensed the United States Government. During World War II and for the duration of the national emergency, Armstrong waived all royalties under his FM patents with respect to FM apparatus manufactured for the United States for military purposes (Petition, 4a).

infringement of receiver patent '066 and system patent '069 which expired on December 26, 1950 and by reason of infringement of reissue '660, containing both system and receiver claims, which expired on September 17, 1957 (DA 86-87).

The decision by the Court of Appeals that Motorola directly infringed the system claims of patent '069 and reissue '660 when it tuned in and listened to FM broadcasts in the course of the design and manufacture of its wide band FM receivers is in full accord with the basic principles of infringement law and the authorities. There is nothing in this case that calls for any limitation upon or reexamination of such basic principles and authorities. On the contrary, it has long been established in this Court and in other federal courts that inventions of great merit will be accorded a liberality of construction and protection commensurate with their true scope and with their advance in science and the useful arts. (See authorities cited by the District Court, Petition 21a). It is manifest from the record that Armstrong's FM inventions were of the highest order and in the classic line of great inventions. They were deserving of protection against a manufacturer who made complete use of them for commercial purposes and refused to pay a reasonable royalty to the inventor. Motorola was properly held liable (1) as a direct infringer of the system claims of patent '069 and reissue '660 when it used its FM receivers and (2) as a contributory infringer when it sold its FM receivers.

Armstrong's FM licenses were also in the classic line. They were not a scheme for collecting double royalties or for the levy of royalty on unpatented equipment. Actually, Armstrong's licenses are an outstanding example of how an independent inventor succeeded in having his inventions adopted throughout a gigantic industry and succeeded in

establishing an open and uniform licensing system in the various fields of radio where his inventions were employed without trade-restraining or anti-competitive consequences of any kind. None of the patent misuse and anti-trust decisions by this Court, including those cited in the petition, was intended to apply to the affairs of an inventor, not engaged in any manufacturing business, who licensed his patents and brought suit against infringers for the sole purpose of securing a reasonable royalty from those who were making commercial use of his patented inventions.

The Court of Appeals and the District Court did not err in deciding that Armstrong's reissue patent '660 was properly and validly reissued. The reissue was allowed in order to protect the invention that was intended to be covered and secured by the original patent and such reissue was in precise accord with the law as enunciated by this Court in *U. S. Industrial Chemicals, Inc.* v. *Carbide and Carbon Chemicals Corp.* (1942), 315 U. S. 668.

ARGUMENT

I. The Armstrong Licenses Provided for the Complete Use of Armstrong's Patented Inventions to the Full Extent of the Commercial Requirements of His Licensees and Did Not Improperly Provide for the Payment of Royalties on Unpatented Equipment.

By his broadcast transmitter licenses, Armstrong granted to the broadcaster the right to employ any and all of his FM inventions in their entirety in the construction, operation and monitoring of an FM broadcast transmitter (Pl. Ex. 14, DA 114-115, 3506-3508). Such FM inventions included (1) the transmitter circuit for producing a frequency modulated wave covered by Armstrong patent No. 1,941,068 and embodied in FM broadcast transmitters (F 28, DA 46); (2) the synchronous heterodyne FM

receiver covered by patent '066 and employed by the broadcaster in monitoring his FM transmission; and (3) the wide band FM and preemphasis inventions covered by patent '069 and reissue '660 in accordance with which the broadcast transmitter was built and adapted to operate. In return for the right to use such FM inventions in connection with his broadcasting operations, the broadcaster paid Armstrong a small lump sum royalty in an amount depending upon the operating power of his transmitter (F. 229, DA 68).

Contrary to the repeated statements in the petition, the broadcaster was not "restricted to the use of one of the unpatented elements of a claimed combination" and Armstrong did not withhold from the broadcaster all rights with respect to other elements of any "claimed combination" (Petition, pp. 6-14). Actually, the broadcaster was authorized to employ Armstrong's FM inventions in their entirety in the conduct of his broadcasting operations which was the business in which he happened to be engaged and for which he took the Armstrong license.

As for the receiver manufacturers, the Armstrong licenses provided that such manufacturer might make FM receivers for home use embodying any of Armstrong's FM receiver inventions (e.g., the synchronous heterodyne invention of patent '066 which has been in universal use for FM broadcast receivers) and that the manufacturer might also employ Armstrong's FM system inventions in the design, manufacture and testing of such receivers (Pl. Ex. 15, DA 116, 3640-3641)*. In return for such unrestricted right

*The use of the wide band FM system was essential in the design and manufacture of wide band FM receivers. As Armstrong wrote to Motorola on December 15, 1948, when he sent a notice of infringement (Pl. Ex. 13, DA 114, 3421):

> "There is one thing about which I am quite sure: No manufacturer can make and sell an FM receiver without first

to employ Armstrong's patented teaching, the manufacturer was to pay Armstrong a royalty in the amount of 2½% of the adjusted selling price of its licensed FM receivers (Pl. Ex. 15, DA 116, 3641-3643). Here again, the manufacturer was licensed to employ Armstrong's FM inventions in their entirety in connection with its home receiver manufacturing operations which was the business in which it was engaged and for which the manufacturer had thought it desirable to have an Armstrong license.

The repeated contention in the petition that Armstrong licensed only unpatented parts of his FM inventions to different manufacturers and users and refused to license the use of his FM inventions in their entirety is wrong and is belied by the express terms of the Armstrong licenses and by the business realities in the radio industry. Furthermore, the contention in the petition that there was a duplication of royalties as between licensed FM broadcasters and licensed receiver manufacturers simply ignores the fact that each of such classes of licensees was independently employing the Armstrong FM inventions in a different business and for its own commercial purposes in such business.*

The Armstrong receiver licenses also included a license or immunity under Armstrong's system patents in respect of the sale of FM receivers by the manufacturer-licensee. The Court of Appeals held that the sale of such FM re-

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determining whether it will work, and in order to determine whether it will work he must utilize a transmitter and receiver, working together, according to the method and the teachings of Patent No. 1,941,069."

*The petition does not challenge Armstrong's licenses for mobile and two-way communication (Petition, p. 5). Yet those licenses provided for royalties in respect for both transmitters and receivers (Pl. Ex. 16, DA 116, 3722-3725). If such "double royalties" were proper in the field of mobile communications, why were they improper in the broadcast field, as asserted in the petition? Motorola gives no explanation for such discrepancy in its position.

ceivers, unless authorized, constituted contributory infringement of the system patents (patent '069 and system claims 1 and 2 of reissue '660). The petition does not challenge such holding of contributory infringement if the Court of Appeals was correct in its holding that the system patents were directly infringed when Motorola and other users of its receivers put such FM receivers into use (Petition, p. 5). However, the holding on contributory infringement vitiates Motorola's contention of patent misuse. The propriety and legality of Armstrong's licenses, in so far as they included a license under the system patents and provision for deriving revenue in respect of the sale of such FM receivers, were explicitly confirmed by 35 U. S. C. § 271(d), supra, page 3. Armstrong could not conceivably have done anything wrong by including in his licenses an immunity under his system patents when the courts have held that the manufacture and sale of FM receivers, unless licensed, constituted direct and contributory infringement of the system patents.

Motorola did not plead misuse at all until after the trial and more than six years after its answer was filed (DA 39-40). In its amendment to the answer after the trial, Motorola pleaded in substance that Armstrong had misused patent '069 by including it in his license to broadcast receiver manufacturers. In other words, Motorola belatedly pleaded that Armstrong had no right to license patent '069 in the broadcast field. That defense was explicitly rejected by the Court of Appeals (Petition, 16a). At no time did Motorola assert below that Armstrong's licenses restricted the licensee to the manufacture, use and sale of unpatented elements or that the licenses were an improper scheme to multiply sources of royalty or to exact double royalties for the use of his inventions.

Authorities Cited in the Petition Have No Bearing on This Case.

Motorola cites the *Mercoid* cases, 320 U. S. 661 and 320 U. S. 680. But those cases are not in point. In *Mercoid*, the mischief which this Court struck down was that the Cross patent had been employed to restrain and interfere with the market in an unpatented appliance. There is no such question here. The controversy here has been simply whether Motorola was entitled to use Armstrong's patented inventions in its manufacturing business and to embody his patented teachings in its receivers without paying a reasonable royalty to Armstrong.

We asserted below that what was said in *Mercoid* about the general nature of the patent grant must be read in the context of the holding by this Court that there had been a misuse of the Cross patent by attempting to wield it as a weapon to regulate and control who might be engaged in the manufacture and sale of certain unpatented appliances. In *Mercoid*, this Court remanded the case to determine whether, in addition to misuse of patents, there had been a violation of the anti-trust laws. But here, there is no anti-trust question whatsoever.

United States v. *Masonite Corp.* (1942), 316 U. S. 265, cited in the petition (pp. 13-14), was an anti-trust case involving price-fixing agreements with competitors that were held not to be justified by patents relating to the price-fixed products. This Court pointed out (page 280) that the case was to be distinguished from situations such as presented here "where the purpose and effect of the marketing plan [here, open non-exclusive licenses without any market-regulating or price-fixing] was to secure to the patentee only a reward for his invention."

Motorola has also cited *Aro Mfg. Co.* v. *Convertible Top Co.* (1961), 365 U. S. 336, and quoted language, out of con-

text, concerning the general nature of the patent grant (Petition, pp. 12-13). In the *Aro* case, the question before this Court involved the distinction between "repair" and "reconstruction" of a patented combination. In *Aro*, this Court held that the supply by Aro of fabric coverings to replace worn out fabrics in a patented convertible top for automobiles constituted a "repair" and not a "reconstruction" of the patented combination. There is no such question here. Motorola was manufacturing orginial equipment (FM receivers) for the wide band FM system and was not engaged in either repair or reconstruction.

In rejecting Motorola's contentions based on the first *Aro* case, the District Court put the matter as follows (PA4a):

> "It is therefore evident that the Supreme Court was not depriving a patentee, an inventor of a combination of unpatented elements, from protecting that monopoly from original infringement by a plurality of persons severally manufacturing the component parts going to constitute the whole patented combination. It was solely passing upon the liability of one making a constituent unpatented replacement part, requisite to the continued functioning of the original patented combination."

In the second *Aro* case, 377 U. S. 476 (1964), an underlying problem that was reflected in the opinions was whether the owner of a patent who had licensed or settled with the large companies who were the primary infringers of its patent should be permitted to collect additional damages from the small suppliers of replacement parts.* There

*This Court held that Aro, a supplier of replacement parts, was liable as a contributory infringer when it supplied fabric coverings for repair of Ford's original convertible tops that were infringing and not licensed, 377 U. S. 476, 482-493. This Court went on to point out that in view of the subsequent settlement between plaintiff and the

is no such problem here. Armstrong did not seek royalties or damages from the suppliers of replacement parts for FM broadcast receivers or transmitters. Motorola and other receiver manufacturers in the broadcast field from whom Armstrong did expect to receive royalties have directly utilized the teachings of Armstrong's FM patents and built his FM inventions into their receivers. Those manufacturers have supplied the original equipment to the public whereby the wide band FM system has come into widespread use. Those manufacturers were primarily and directly responsible for paying a reasonable royalty to Armstrong for the use of his FM inventions and that is the right—and the only right—that plaintiff seeks to vindicate in this action.

We point out that the home users of Motorola FM receivers did not have to know anything at all about Armstrong's patented inventions and did not have to adjust their receivers in any particular way in order to secure the benefits of Armstrong's teaching because Motorola had employed Armstrong's inventions in manufacturing the receivers and had built his inventions into the receivers. Armstrong did not assert his patent against home users or against radio distributors, retailers or servicing agencies. Armstrong's policy in licensing receiver manufacturers was designed to secure a reasonable compensation for the use of his inventions from those who were making direct commercial use of his inventions in manufacturing and supplying for distribution to the public the original equipment whereby his inventions came into widespread use. Compare *Aro Mfg. Co.* v. *Convertible* Top Co., 377 U. S. 476, 502-513 and 523-531.

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primary infringer, Ford Motor Company, damages from Aro, the contributory infringer, might be only nominal. The case was remanded for an accounting of damages where it would be determined on evidence whether the Ford settlement had provided for *full* payment to the patent owner for the use of its patented invention in Ford cars.

2. The Reissue Patent No. 21,660 Was Validly Reissued

Motorola contends that the Court of Appeals erred in holding that reissue '660 was for the same invention as was in the original patent and that the decision of the Court of Appeals is in conflict with *U. S. Industrial Chemicals Co.* v. *Carbide and Carbon Chemicals Corp.* (1942), 315 U. S. 668. On the uncontradicted facts of record, the petitioner's contention is manifestly erroneous.

In reissue '660, the receiver claims added by reissue cover the structure and operation of a wideband FM receiver with deemphasis circuits and a wide admittance band, precisely as such structure and operation of the receiver were included in the system claims of the original patent (F 166, DA 59). The Court of Appeals pointed out that the only change in the specification of reissue '660 as compared with original patent No. 2,215,284 was the correction of a palpable and minor error in language in the original specification (Petition, 10a). The Court of Appeals further pointed out that the only difference between the system claims in the original patent and the receiver claims added by reissue was that the claims in the original patent referred to a transmitter and receiver in combination, whereas the claims added by reissue were directed to a receiver for receiving a wave that had been predistorted at a transmitter as provided in the claims of the original patent. As the Court of Appeals stated:

> ". . . Here the receiver claims specify that the receiver be adapted for reception of a preemphasized wave, but such wave would be produced only by a transmitter operated as disclosed in the original patent." (Petition, 11a)

The Court of Appeals held that the receiver claims of reissue '660 were not for a different invention than was disclosed and claimed in the original patent.

It is manifest that the receiver claims of reissue '660 relate to the invention that was intended to be protected and secured by the original patent. It was always Armstrong's intent that the original patent and its system claims would protect him in connection with the manufacture and sale of wide band FM receivers embodying deemphasis circuits and a wide admittance band, precisely as disclosed in the original patent and as receiver manufacturers later manufactured and sold such receivers. Armstrong's intent in that regard is manifest from the legalistic nature of the changes that were made in the reissue patent and is confirmed by plaintiff's charge of infringement and by the holdings of the courts below on infringement. Plaintiff charged and the courts below have held that Motorola infringed system claims 1 and 2 of the original patent by its manufacture and sale of television sound receivers and FM broadcast receivers. The receiver claims added by reissue, also held to have been infringed by Motorola, do not add or change anything with respect to physical structure or operation of the receivers or with respect to the preemphasis and deemphasis system in which such receivers are employed. Indeed, the FM receivers covered by the receiver claims of the reissue '660 patent have utility and function in the suppression of noise and avoidance of distortion as disclosed in the original patent only when a preemphasized transmitter, operating as disclosed in the original patent, provides a preemphasized wave for reception by such receivers.

The Principles of the *U. S. Industrial Chemicals* Case Were Properly Applied

The reissuance of Armstrong's original patent No. 2,215,284 on December 17, 1940, within three months of the issuance of the original patent, was in full accord with the law as enunciated by this Court in *U. S. Industrial Chemicals,* 315 U. S. 668. The statutory requirement as interpreted by this Court in that case, pp. 675-676, and quoted in the petition, p. 16, is as follows:

> "The question is whether, in the light of the disclosures contained in the two patents, they are for the same invention. This court has said that they are if the reissue fully describes and claims the very invention intended to be secured by the original patent; if the reissue describes and claims only those things which were embraced in the invention intended to have been secured by the original patent; if the broader claims in the reissue are not merely suggested or indicated in the original specification but constitute parts or portions of the invention which were intended or sought to be covered or secured by the original patent. * * * * * And it is not enough that an invention might have been claimed in the original patent because it was suggested or indicated in the specification. It must appear from the face of the instrument that what is covered by the reissue was intended to have been covered and secured by the original."

In *U. S. Industrial Chemicals,* this Court held the Lefort reissue patent there at bar to be invalid because the claims of the Lefort reissue patent were found to cover a chemical process for the manufacture of ethylene oxide which was not in accordance with the teaching in Lefort's original

patent and which was not intended to be protected or secured by the claims of the original patent. Lefort's original patent had taught that the addition of water was an essential step in the catalytic reaction process therein described. Lefort's reissue patent disclosed that the addition of water was immaterial in such reaction process and the claims of Lefort's reissue patent omitted any reference to the addition of water in the reaction process. On the basis of the difference in chemical teaching between the original and reissue patents, this Court held that the Lefort reissue claims would cover a catalytic reaction process that had not been disclosed in the original patent and which the patentee had not intended to protect and secure by the original patent.

That is not the situation here. It is true that the receiver claims of Armstrong reissue '660 do not explicitly call for a preemphasized transmitter, but they call for such transmitter by necessary implication. The receiver claims call for a receiver adapted to receive a preemphasized wave but such preemphasized wave could be produced only by a preemphasized transmitter constructed and operated as disclosed in the original patent (Petition, 28a-30a). Contrary to the situation in *U. S. Industrial Chemicals,* there was no change in inventive teaching in Armstrong's reissue '660 and there was no teaching that a step, disclosed in the original patent as necessary to practice of the invention of preemphasis and deemphasis, might be omitted. The sole consequence of the receiver claims added by reissue was that the sale of deemphasized wide band FM receivers with wide admittance band constituted direct infringement of such receiver claims, whereas the sale of such receivers constituted contributory infringement of the system claims in the original patent.

Motorola's contentions against reissue '660 are rooted in semantics, but the words of Armstrong's original and reissue patents provide no support for its contentions.

3. Motorola Directly Infringed Patent No. 1,941,069 and Claims 1 and 2 of Reissue Patent No. 21,660 When It Tested Its Receivers in the Course of Their Design and Manufacture.

The Court of Appeals held that Motorola directly infringed the system claims of patent '069 and reissue '660 when, without authorization, it tuned in its wide band FM receivers and tested them by listening to wide swing FM broadcasts. The Court of Appeals stated (Petition, 13a):

> ". . . Here Motorola tested its receivers by tuning them to transmitters employing the Armstrong FM teachings. This constituted a 'use' of the system patent because the radio waves generated by the Armstrong transmitters were received and converted into sound by the Motorola receivers. * * * Section 271(a) of the Patent Act does not require ownership of the system before infringement can occur. The test under the Act is whether there has been use of the system. As shown, such use occurred when Motorola tested these receivers."

The petition comments on this holding by the Court of Appeals as follows (Petition, p. 20):

> "The core of the Court of Appeals opinion, quoted above, is that a use of the broadcasted wave in a receiver is the same as a use of the transmitter. The opinion necessarily construes the words 'patented invention' in § 271(a) as being broad enough to include more than the alleged invention stated in the combination claims in issue here. Each claim states that the 'invention' is a combination of a transmitter and a receiver. The opinion says, in effect, that the 'patented invention' also consists of doing

> *no more* than receiving a wave and reproducing it." (italics in original)

The petition misinterprets the opinion of the Court of Appeals. The Court of Appeals did not say that the use of a transmitter is the same thing as the reception of a broadcasted wave and did not say that the use of Armstrong's wide band invention "consists in doing no more than receiving a wave and reproducing it". What the Court of Appeals did say was that Section 271(a) of the Act does not require that there be common ownership of the wide swing transmitter and wide band FM receiver before direct infringement could occur. The Court of Appeals took note of the fact that when FM broadcast transmitters operating in accordance with Armstrong's teachings were on the air and when wide band FM receivers, also constructed in accordance with Armstrong's teachings, were tuned in and receiving the waves broadcast from such transmitters, there was the "totality of the elements" assembled and operated for the practice of Armstrong's invention as claimed and that the use of such assembly, unless authorized, constituted direct infringement of patent '069 and reissue '660. When Motorola tuned in its FM receivers to FM broadcasts on the air, Motorola completed the use of Armstrong's inventions and such unlicensed acts by Motorola, as held by the Court of Appeals, constituted direct infringement of patent '069 and of system claims 1 and 2 of reissue '660. The Court of Appeals held further that Motorola became a contributory infringer when it sold its FM receivers (Petition, 14a).

The statement in the petition that the practice of Armstrong's system invention required that a single person or entity operate both the transmitter and receiver (Petition, p. 21) is in conflict with the facts as to how broadcasting is organized and operated. It also is in conflict with Arm-

strong's patent '069 which disclosed a new art of radio communication that was embodied in novel radio transmitters and novel receivers to produce a new result in noise reduction, regardless of who might own the constituent parts.

Manifestly, Armstrong's inventive teaching had nothing to do with the historical accidents of equipment ownership in the broadcast services; and the full use of his inventive teaching and the resulting establishment of new and superior radio services for the public was not precluded by the circumstance that in the United States broadcast receivers are privately owned and are not owned or normally supplied by the corporations which own the broadcast transmitting facilities.

Moreover, there is no requirement in the patent law that direct infringement can exist only if there can be found a single person or entity—as distinguished from several persons acting in concert or in sequence—who practices all of the steps of an invention or owns and operates all of the apparatus connected with the invention. The petition cites no authority to the contrary.* There has never been any such limitation in the patent statute, and the federal courts, when the circumstances were presented, have uniformly held that a patent on an inventive system or combination comprising separate assemblies owned and operated by different persons was infringed by the conjoint use of the interacting but separately owned assemblies.

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*Motorola suggests that the claims of patent '069 require that "the infringer", viz. one person, control both the transmitter and receiver (Petition, p. 21). But there is nothing in the '069 claims or in the nature of radio communication that calls for such common control (Petition, 28a).

The Authorities Confirm That Infringement of a System Patent Does Not Depend Upon Common Ownership and Operation of All of the Constituent Parts.

Such a situation was presented by the famous patents of Nikola Tesla relating to the generation and transmission of power by the use of polyphase electric currents. The Tesla patents were on a system comprising a generator for producing polyphase current (that would normally be operated by a public utility) and a motor that was adapted to be driven by Tesla's novel polyphase current and that would normally be owned by a commercial user of electric power. The Tesla generator and motor, working together as complementary instruments, constituted a major improvement in the utilization of electric power over great distances.

The federal courts held that the manufacture and use of motors adapted to work in Tesla's patented system infringed the Tesla system patents, despite the fact that the generators which were part of the patented system were not owned or operated by the infringer. (*Westinghouse Electric & Mfg. Co.* v. *Dayton Fan & Motor Co.* (CC SD Ohio WD, 1901), 106 F. 724, 729, aff'd (CCA 6, 1902), 118 F. 562; *Westinghouse Electric & Mfg. Co.* v. *New England Granite Co.* (CC Conn., 1900), 103 F. 951, 967, 972; *Westinghouse Electric Mfg. Co.* v. *New England Granite Co.* (CCA 2, 1901), 110 F. 753).

A similar situation was later presented in the extensive grease gun litigation which reached this Court (*Lincoln Co.* v. *Stewart-Warner Corp.* (1937), 303 U. S. 545, and *Rogers* v. *Alemite Corporation*, reported with *Bassick Co.* v. *Hollingshead Co.* (1936), 298 U. S. 415, 423-426). The patents in those cases related to systems for greasing automobiles comprising grease guns, special fittings on the

automobile at bearing points and special couplers to link the grease gun to fittings on the automobile so that grease under high pressure could be applied to the bearings. Some of the patents had claims on the complete assembly of grease gun, coupler and fittings. A complete use of the patented assembly occurred when the owner of an automobile with fittings installed by the manufacturer took his car to a garage and a mechanic greased the car with a grease gun and coupler owned by the garage and purchased from its own supplier.

In the grease gun cases, the lower federal courts, after finding that there was invention in the assembly and that the particular claims on the assembly were valid, held that there was infringement by the separate sale of fittings to automobile manufacturers and by the separate sale of guns with couplers to garages. Infringement by the unauthorized sale of such separate devices was found despite the fact that there would be situations where unlicensed fittings would be greased by licensed guns and couplers and unlicensed guns and couplers might be used to force grease through licensed fittings. (*Stewart-Warner Corporation* v. *Le Vally* (ND Ill. 1936), 15 F. Supp. 571; aff'd *Lincoln Engineering Co.* v. *Stewart-Warner Corporation* (7 Cir. 1937), 91 F. 2d 757; *Bassick Mfg. Co.* v. *Adams Grease Gun Corporation* (2 Cir. 1931), 52 F. 2d 36, 37-39; and *Alemite Corporation* v. *Rogers et al.* (WD Pa. 1934), 5 F. Supp. 940; aff'd *Rogers et al.* v. *Alemite Corporation* (3 Cir. 1934), 74 F. 2d 1019).

While the grease gun cases were reversed in this Court (*Rogers* v. *Alemite Corporation,* reported with *Bassick* v. *Hollingshead,* 298 U. S. 415, 423-426, and *Lincoln Co.* v. *Stewart-Warner,* 303 U. S. 545), it is significant that the express ground of reversal was that the patent claims were void. Contrary to the decisions below, this Court concluded

that there was not any invention in the assembly and interaction of grease gun, coupler and fitting and that the claims on the assembly were void as claiming more than the patentees had invented. This Court did not rule that there could not be infringement of a valid patent on the grease gun system unless there was common ownership of all of the constituent parts of the system. On the contrary, implicit in the opinions was the premise that the patents were infringed, as held below, unless the system claims were void.

So here, the only significant question could be whether Armstrong's wide band FM system constituted patentable invention and whether patent '069, which claimed the system as a whole, is valid. The courts below have thoroughly examined that question and have sustained Armstrong's patents on a record that shows invention of the highest order. No question as to the validity of patent '069 (nor of system claims 1 and 2 of reissue '660) is presented in the petition.

Motorola's contentions here show no conflict in federal decisions on infringement of system patents and do not present any substantial question concerning the principles of infringement law nor any question of public importance.

CONCLUSION

The petition for certiorari should be denied.

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